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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PARK, CHAN S

ART UNIT PAPER NUMBER

2622

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/680,543

Applicant(s)

REEVES ET AL.

Examiner

CHAN S PARK

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7 and 9-11 is/are rejected.
- 7) ☒ Claim(s) 4, 8 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received on 8/20/04, and has been entered and made of record. Currently, **claims 1-12** are pending.

Response to Arguments

2. Applicant's arguments, see pages 7-8, filed 8/20/04, with respect to the rejection(s) of claim(s) 1, 2, 5, 6, 9, and 10 under 35 U.S.C. § 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Frame et al. U.S. Patent No. 4,590,520 (hereinafter Frame) and Milch U.S. Patent No. 4,638,371.

Claim Objections

3. Claims 1-12 are objected to because of the following informalities:

Throughout the claims, "said array" should be - said array of sensors - and "said pixels" should be - said array of pixels -.

Claim 7, "said pixel data" should be - said array of pixel value -.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3, 7 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, claim 3 seems to indicate that two distinct devices, a signal converter of claim 1 and a data processor of claim 3, perform the same process (converting signals data into pixel data). If the data processor and the signal convert are two distinct devices in the system, which of two actually converts the signal data to "said pixel data"? Does the data processor generate the same "said pixel data" again which already exists by the signal converter of claim 1? It is unclear as to how the two are related according to fig. 1.

Likewise, the meaning of "converting said digital signal data into said pixel data" of claims 7 and 11 is uncertain? Does the method generate the same "said pixel data" again which already exists from the respective independent claims?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5-7, and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frame in view of Milch.

5. With respect to claim 5, Frame teaches an image digitizing method comprising:
calibrating an array of sensors so as to distinguish "good" and "bad" sensors (col. 7, lines 6-7; col. 9, lines 62-28; and col. 10, lines 1-7);

using said array of sensors to convert a visual image to signals (combination of SLAB 2000, small spot defect detector 3000, and dead spot fill-in processor);

converting said signals to image data including pixel values associated with an array of pixels, pixel values associated a good sensor being a function of the signal provided by that good sensor, pixel values associated with a bad sensor not being a function of the signal provided by that bad sensor but being a function of at least one signal provided by a neighboring good sensor.

Frame teaches that the system looks for dead spot defects; when one is detected the system holds the last valid signal to fill-in the dead spot (col. 9, lines 62-68 and col. 10, lines 1-7). And that during calibration as detailed in col. 7, lines 6-50, the system looks for a bad signal and fills in the bad signal with a good signal from the previous pixel.

Although, as the applicant argued in the Remarks filed on 8/20/04, Frame does not teach expressly that each pixel in an image corresponds to a respective sensor in an array, Examiner believes that it is well known in the art that each sensor in a scanner provides a respective signal/pixel in an image.

Milch, the same field of endeavor of the correcting the pixels values produced by the defective sensors, teaches an image digitizing method comprising:

using an array of sensors to convert a visual image to signals;

converting said signals to image data including pixel values associated with an array of pixels, each pixel corresponding to a respective one of said sensors (col. 4, lines 12-49), pixel values associated with a bad sensor being a function of at least one signal provided by a neighboring good sensor (Abstract and col. 5, lines 17-35). Thus, Milch teaches the method of dealing with a pixel, which corresponds to a defective pixel, by using the signals provided by a neighboring sensors.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate the array of sensors of Milch into the calibration system of Frame.

The suggestion/motivation for doing so would have been to correctly identify which array of sensor is defective by analyzing the respective signals.

Therefore, it would have been obvious to one of ordinary skill in the art to combine Frame with Milch to obtain the invention as specified in claim 5.

6. With respect to claim 6, as previously set forth in the Office action dated 5/18/04, Frame discloses (fig. 1, #1000, col. 6, lines 22-38) an image digitizing method, wherein said image data describes a series of raster lines, each of said raster lines including a series of said pixels, all pixels associated with said bad sensor having values determined not as a function of a signal provided by said bad pixel but as a function of said neighboring good sensor.

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In accordance with the "calibrate" mode of Frame (col. 9, lines 35-68 and col. 10, lines 1-7), the pre-stored digital sensitivity correction coefficients are stored in memory 112 for each pixel and these have been schematically illustrated in bar graph format at line (d) on fig. 5. As will be observed, the pre-stored correction coefficient associated with pixels containing the dead spot are of abnormal values. Since the dead spot does not extend very far into pixel P1, its correction coefficient C1 is only slightly different from the nominal values associated with normal or active pixels P3, P4, and P5 as depicted in fig. 5. However, since most of pixel P2 is occupied by the dead spot, its correction coefficient C2 is almost at a limit value (e.g., in the example being described it is assumed that correction coefficients have a dynamic range extending from 0 to 1.0). It should be noted that the schematically depicted correction coefficients at line (d) of fig. 5 would actually have been fetched from the memory 112 at least one clock cycle earlier than the real time occurrence of the pixel with which they are associated. In this manner, the onset of the dead spot can be detected by the excessive rate of change between coefficients C1 and C2 in sufficient time to actually begin the sample and hold fill-in enabling signal (e.g., as shown in line (e) of FIG. 5) in real-time at the beginning of pixel P1. The termination of the dead spot is similarly detected by the abrupt transition (in the reverse direction) between coefficients C2 and C3. Here, the termination of the fill-in enabling signal is delayed to occur in real-time at the end of pixel P2 as also depicted in FIG. 5. For the duration of the fill-in enabling signal shown at line (e) of FIG. 5, the read time video signal is switched out and replaced by a synthesized approximately correct video signal. As depicted in line (f) of FIG. 5, the result is a real

time video signal with filled in dead spots where, in the exemplary embodiment, the dead spot is filled simply by holding constant the last "valid" video signal level which occurred at the time the fill-in enabling signal was initiated.

7. With respect to claim 7, Milch teaches the method, wherein said converting step involves:

converting said signals into digital signal data; and

converting said digital data into said pixel value using sensor calibration values associates with respective ones of said sensors (pixel values associated with the neighboring pixels generated by neighboring sensors), pixel values associated with a bad sensor being a function of at least one signal provided by a neighboring good sensor (Abstract; col. 4, lines 12-49; and col. 5, lines 17-35). Thus, Milch teaches the method of dealing with a pixel, which corresponds to a defective pixel, by using the signals provided by a neighboring sensors.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate the array of sensors of Milch into the calibration system of Frame.

The suggestion/motivation for doing so would have been to correctly identify which array of sensor is defective by analyzing the respective signals.

Therefore, it would have been obvious to one of ordinary skill in the art to combine Frame with Milch to obtain the invention as specified in claim 7.

8. With respect to claim 1, arguments analogous to those presented for claim 5, are applicable.

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9. With respect to claim 2, arguments analogous to those presented for claim 6, are applicable.

10. With respect to claim 3, arguments analogous to those presented for claim 7, are applicable.

11. With respect to claim 9, arguments analogous to those presented for claim 5, are applicable.

12. With respect to claim 10, arguments analogous to those presented for claim 6, are applicable.

13. With respect to claim 11, arguments analogous to those presented for claim 7, are applicable.

Allowable Subject Matter

14. Claims 4, 8, and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and rewritten to overcome 112 rejection and objections.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHAN S PARK whose telephone number is (571) 272-7409. The examiner can normally be reached on M-F 8am-4:30pm.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Coles can be reached on (571) 272-7402. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chan S. Park
Examiner
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csp
April 4, 2005


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